

## **<sup>159</sup>Hf**

The first observation of <sup>159</sup>Hf was reported in the 1973 paper “Study of hafnium  $\alpha$  emitters: New isotopes <sup>159</sup>Hf, <sup>160</sup>Hf, and <sup>161</sup>Hf” by Toth et al. (1973To02). Enriched <sup>144</sup>Sm and <sup>147</sup>Sm targets were bombarded with 80–153 MeV and 121–153 MeV <sup>20</sup>Ne beams from the Oak Ridge isochronous cyclotron, respectively. Recoil products were swept into a collecting surface with helium gas where  $\alpha$  particles were measured with a Si(Au) detector. “The decay characteristics and mass assignments (made on the basis of yield curve measurements, cross bombardments, and parent-daughter relationships) of the three new  $\alpha$  emitters are as follows: (1) <sup>159</sup>Hf,  $E_\alpha = 5.09 \pm 0.01$  MeV,  $T_{1/2} = 5.6 \pm 0.5$  sec; (2) <sup>160</sup>Hf,  $E_\alpha = 4.77 \pm 0.02$  MeV,  $T_{1/2} \sim 12$  sec; and (3) <sup>161</sup>Hf,  $E_\alpha = 4.60 \pm 0.01$  MeV,  $T_{1/2} = 17 \pm 2$  sec.”

Adapted from reference (2012Gr19)

- 1973To02 K. S. Toth, R. L. Hahn, C. R. Bingham, M. A. Ijaz, and R. F. Walker Jr., Phys. Rev. C **7**, 2010 (1973).  
2012Gr19 J. L. Gross and M. Thoennessen, At. Data Nucl. Data Tables **98**, 983 (2012).

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